Acacia mearnsii

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Acacia mearnsii De Wild.

Taxonomy and nomenclature

Family: Fabaceae (Mimosoideae)

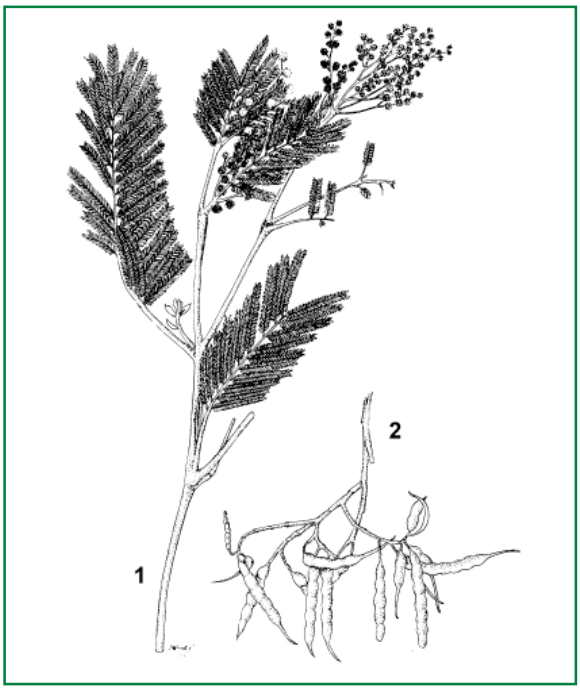
Synonyms: *A. molllissima* Willd., *A decurrens* (Wendl.) Willd. var. *mollis* Lindl. *Rocosperma mearnsii*

Vernacular/common names: black wattle (standard trade name); acacia noir (Fr.); acacia negra (Sp.).

Distribution and habitat

A fast-growing, nitrogen-fixing tree adapted to a wide range of sites from the temperate and subtropical lowlands to tropical highlands.

It is native to Australia but grown world-wide. Optimal areas in the subtropics are above 400 m in altitude, 850-1200 mm rain/yr. and mean temperature above 16°C. In tropical areas it is best grown in highlands at 1500-2500 m altitude, 900-1600 mm rain/yr. and mean temperature of 12-18°C. Absolute minimum temperature of 5°C to avoid frost damage. Fairly tolerant to soil type but prefers moist, relatively deep light-textured and well-drained soils. Light-demanding and sensitive to fire.



1, Flowering branch; 2, pods. From: Plant resources of South-East Asia.

Uses

Produces high quality tannin, paper pulp, firewood and charcoal. Used for erosion control, windbreaks and soil improvement.

The use of tannin for production of waterproof wood adhesives is expanding. It is an efficient nitrogen-fixer with annual yields up to 250 kg/ha of fixed nitrogen, and it is also a good source of green manure. Unfortunately an aggressive coloniser that is becoming a weed in many places.

Botanical description

Tree or large shrub, 6-10 m tall, sometimes reaching 25 m and with a diameter up to 60 cm. The bark is brownish-black, hard and fissured. Young branches with hairs. No thorns. Leaves 8-12 cm long, fern like; 8-21 pinnae each with 16-70 pairs of small, olive green leaflets.

Inflorescence a globular head with 20-30 pale yellow-white flowers. The inflorescences are arranged in a much branched panicle.

Fruit and seed description

Fruit: pod with fine hairs, straight or almost so, often constricted between the seeds. Typically 7 seeds/fruit.

Seed: small, 3-5 mm long, black, smooth with a short cream-coloured aril. There are 65,000-90,000 seeds per kg.

Flowering and fruiting habit

Flowering begins when the trees are about 2 years old, but significant seed production does not start before the fifth or sixth year.

Flowering takes place from October to December in Australia, during September to October in Brazil and from late August to early October in South Africa. Mature seed is available for collection some 12-14 months after flowering.

Pollinated by insects, especially bees. *A. mearnsii* is regarded as an outcrossing species with partial self-compatibility. Estimates of out-crossing rates in this species are variable and range from 48 to 100%. It is common that many of the flowers are male only.

Harvest

The pods are dehiscent and seeds are dispersed when the pods open. When the seeds are mature, they change colour from white to black and the pod colour changes from green through yellow to brown. There is great variation within and between trees in regard to time of ripening.

Collection can take place when the pods have turned yellow. There are typically 2-3 weeks from the seeds are mature and until the are dispersed. Collection can be from the tree or from covers on the ground.

Processing and handling

Fresh pods have a high moisture content and gunny bags should be used for temporary storage. For the seed to afterripen, the pods are spread out on a cover in the shade until they turn brown. The pods are then left in the sun to dry until they open and the seed is released. To extract the seed, a flailing thresher is effective. After extraction the seed is dried directly in the sun, which may take several days.

Storage and viability

The seed is orthodox. When properly stored in airtight containers the seed can keep high viability for many years. Optimal moisture content for storage is 5-7 %.

Dormancy and pretreatment

The seeds have a hard seedcoat and requires pretreatment by immersion in boiling water for 1 min or 90°C for 3 min followed by soaking in cold water for 24 h.

Sowing and germination

The seeds can be sown directly in the field or in containers. Normally two seeds are sown and surplus seedlings transplanted to empty pots. Seedlings are ready for outplanting after about 4 months when they are 20 cm tall.

Inoculation with rhizobium bacteria may be necessary when it is grown outside of its natural range. For direct sowing in the field, the seed is sown in rows 1.8-2.7 m apart in well-cultivated and weed-free ground and later thinned until the spacing is appropriate.

Germination is typically 50-80%. Vegetative propagation is possible using 10-15cm cuttings with leaves. Mist spray, constant heat of 28°C, and mixtures of IBA and NAA appear essential to good rooting.

Selected readings

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Trees pollarded for shade in tea estates in India. Photo: Douglas Boland, CSIRO, Forestry & Forest Products.

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